

**Portland Water District
Cumberland County
Standish, Maine
A-559-71-E-R (SM)**

**Departmental
Findings of Fact and Order
Air Emission License**

After review of the air emissions license application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Portland Water District of Standish, Maine has applied to renew their Air Emission License permitting the operation of emission sources associated with their water treatment facility.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Electrical Generation Equipment

<u>Equipment</u>	<u>Power Output (kVA)</u>	<u>Maximum Capacity (MMBtu/hr)</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>	<u>Stack #</u>
Generator #1	1,000	10.1	75	Diesel, 0.05%	1
Generator #2	1,000	10.1	75	Diesel, 0.05%	2

Process Equipment

<u>Equipment</u>	<u>Production Rate</u>	<u>Pollution Control Equipment</u>	<u>Stack #</u>
Ozone Destruction Unit	52 million gal/day water	Thermo./catalyst	3

Insignificant Equipment

Portland Water District operates six space-heating boilers and two water heaters, each of which are rated at less than 1.0 MMBtu/hr heat input and are therefore considered insignificant pursuant to MEDEP Chapter 115, Appendix B(B)(2). The units may still be subject to the opacity requirements of MEDEP Chapter 101. They are listed here for inventory purposes only.

C. Application Classification

The application for Portland Water District does not include the licensing of increased emissions or the installation of new or modified equipment. Therefore, the license is considered to be a renewal of current licensed emission units only

and has been processed through Chapter 115 of the Department's regulations. With the operating hour limit on Generator #1 and Generator #2, the facility is licensed below the major source thresholds and is considered a synthetic minor.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in Chapter 100 of the Department regulations. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

B. Process Description

The Portland Water District's Sebago Lake Water Treatment Facility provides water for household use to 200,000 customers in the greater Portland area. Water is drawn from Sebago Lake through inlet points 80 feet beneath the lake's surface. The water passes through screens to filter out suspended material and then through contact tanks where ozone is bubbled into the water. This serves as the primary treatment as ozone reacts with the water to destroy viruses, parasites and Giardia to meet EPA standards for safe drinking water. Chlorine gas, Fluoride and other additives are completely dissolved in the water for secondary disinfection.

The Water District generates its own ozone for use in the water treatment process. Atmospheric air is drawn in with air compressors. Moisture is removed from the air in a refrigerant dryer, which cools the compressed air causing the moisture to condense out. Following the refrigerator dryer the air passes through a desiccant airbed dryer, which consists of a tower filled with particulate packing that absorbs moisture from the air. At the end of the drying process, the air is at a -80 or -90 °F dew point. The dry air is then piped into the ozone generator. High voltage, low amperage electricity splits some of the oxygen (O₂) molecules in the air. The free oxygen atoms bond with other O₂ molecules that are present, forming ozone (O₃.) Of the air that passes through the ozone generator, about 1.5 to 2% forms ozone. Most of this ozone (about 90%) is absorbed into the water in the contact tanks. A constant vacuum is maintained on the contact tanks to draw the air and un-reacted ozone through the water in the tank. From there it passes through the ozone destruct system, which consists of a carbon based material that is heated

with a catalyst to destroy any remaining ozone that did not enter the water. Ozone concentrations at the outlet of the ozone destruct system are less than 0.1 ppmv.

C. Back-up Generators #1 and #2

Portland Water District operates two back-up diesel generators. The generators are operated when a reliable source of sufficient electric power is unavailable.

A summary of the BPT analysis for Generator #1 (1,000 kVA) and Generator #2 (1,000 kVA) is the following:

1. The generators shall fire only diesel fuel with a maximum sulfur content not to exceed 0.05% by weight.
2. The generators shall each be limited to 500 hours/year of operation based on a 12 month rolling total. Compliance shall be demonstrated by a written log of all generator operating hours.
3. Chapter 106 regulates fuel sulfur content, however in this case a BPT analysis for SO₂ determined a more stringent limit of 0.05% was appropriate and shall be used.
4. Chapter 103 regulates PM emission limits. The PM₁₀ limits are derived from the PM limits.
5. NO_x, CO, and VOC emission limits are based upon AP-42 data dated 10/96.
6. Visible emissions from each generator shall each not exceed 20% opacity on a 6-minute block average, except for no more than one 6-minute block average in a 3-hour period.

D. Ozone Destruction Unit

The Ozone Destruction Unit is used to destroy excess ozone that is not absorbed into the water in the contact tanks. The destruction unit consists of carbon-based packing, which is heated by a catalyst to transform the O₃ into oxygen gas which is released to the atmosphere. Ozone concentrations are monitored at the inlet and outlet of the destruct unit. Measured outlet concentrations are less than 0.1 ppmv. The device achieves a 99.9% capture and control efficiency.

The Portland Water District shall operate the Ozone Destruction Unit on all ozonated air before it is released to the atmosphere.

E. Annual Emissions

Annual facility emissions are based on 500 hours of operation of the generators, on a 12-month rolling total, firing fuel with a sulfur content of 0.05% by weight, and 1 ton/year HAP released through the ozone destruct system, on a 12-month rolling total.

Portland Water District shall be restricted to the following annual emissions, based on a 12 month rolling total:

**Total Licensed Annual Emission for the Facility
Tons/year
(used to calculate the annual license fee)**

	PM	PM₁₀	SO₂	NO_x	CO	VOC
Generator #1	0.31	0.31	0.13	8.08	2.15	0.21
Generator #2	0.31	0.31	0.13	8.08	2.15	0.21
Total TPY	0.62	0.62	0.26	16.16	4.30	0.42

III.AMBIENT AIR QUALITY ANALYSIS

According to the Maine Regulations Chapter 115, the level of air quality analyses required for a renewal source shall be determined on a case-by case basis. Based on the above total facility emissions, Portland Water District is below the emissions level required for modeling and monitoring.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-559-71-E-R subject to the following conditions:

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 MRSA §347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [MEDEP Chapter 115]

- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [MEDEP Chapter 115]
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [MEDEP Chapter 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S.A. §353. [MEDEP Chapter 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [MEDEP Chapter 115]
- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [MEDEP Chapter 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [MEDEP Chapter 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [MEDEP Chapter 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [MEDEP Chapter 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:

- A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 - 1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 - 2. pursuant to any other requirement of this license to perform stack testing.
 - B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - C. submit a written report to the Department within thirty (30) days from date of test completion.
[MEDEP Chapter 115]
- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and
 - B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
[MEDEP Chapter 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [MEDEP Chapter 115]
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions

unit itself that would affect emission and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [MEDEP Chapter 115]

- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [MEDEP Chapter 115]

SPECIFIC CONDITIONS

(16) **Back-Up Generators #1 and #2**

- A. Portland Water District shall limit each back-up generator to 500 hours/year of operation (based on a 12-month rolling total). An hour meter shall be maintained and operated on each Generator. [MEDEP Chapter 115, BPT]
- B. Back-up Generators #1 and #2 shall be operated for back-up purposes only or for short periods to exercise the units and to keep them in operating order. The generators shall not be used for prime power, load sharing or load shedding. A log shall be maintained and updated each time each generator runs, documenting the date, time, and reason for its operation. [MEDEP Chapter 115, BPT]
- C. The generators shall fire fuel oil with a sulfur content not to exceed 0.05% by weight. Compliance shall be based on fuel records from the supplier showing the quantity of fuel delivered and the percent sulfur of the fuel. [MEDEP Chapter 115, BPT]
- D. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Generator #1	PM	0.12	MEDEP, Chapter 103, Section 2(B)(1)(a)
Generator #2	PM	0.12	MEDEP, Chapter 103, Section 2(B)(1)(a)

- E. Emissions shall not exceed the following [MEDEP Chapter 115, BPT]:

Emission Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #1	1.22	1.22	0.52	32.4	8.59	0.83
Generator #2	1.22	1.22	0.52	32.4	8.59	0.83

F. Visible emissions from the Emergency Generator shall not exceed 20% opacity on a 6-minute block average, except for no more than one 6-minute block average in a continuous 3-hour period. [MEDEP Chapter 101]

(17) **Ozone Destruction Unit**

Portland Water District shall operate the Ozone Destruction Unit on all ozonated air before it is released to the atmosphere. [MEDEP Chapter 115, BPT]

(18) **Dispatchable Load Generators**

Portland Water District shall submit an application for an amendment prior to operating the Back-Up Generators as Dispatchable Load Generators. [MEDEP Chapter 115]

(19) **Notification of Violation**

Portland Water District shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 MRSA §605).

(20) **Payment of Annual License Fee**

Portland Water District shall pay the annual air emission license fee within 30 days of December 31 of each year. Pursuant to 38 MRSA §353-A, failure to pay this annual fee in the stated timeframe is sufficient grounds for revocation of the license under 38 MRSA §341-D, subsection 3.

DONE AND DATED IN AUGUSTA, MAINE THIS _____ DAY OF _____ 2005.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
DAWN R. GALLAGHER, COMMISSIONER

The term of this license shall be five (5) years from the signature date above.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: April 6, 2005

Date of application acceptance: April 8, 2005

Date filed with the Board of Environmental Protection: _____

This Order prepared by Rachel E. Pilling, Bureau of Air Quality.